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ABSTRACT

This paper summarizes and highlights some of the critical developments, issues, and trends which impact the work of survey research. The issue of preventing or minimizing nonresponse bias by successfully obtaining cooperation from people being surveyed continues to be of concern to survey research professionals. The most effective response rate stimulating strategies are those that are creatively designed to fit the people being surveyed and flexible enough to meet the changing characteristics of different populations. Regarding the effect of people who are unreachable by telephone, the important issue is making certain the sample is not different from the population in some way that will affect the results. An approach to obtaining truthful answers to questions of a sensitive nature is the randomized response technique, which presents the respondent with more questions than just the sensitive question. New developments in technology have impacted survey research in data collection and data analysis, specifically with the use of Computer Assisted Telephone Interviewing and the personal computer. Certain emerging trends might endanger the quality of research efforts: (1) over-emphasizing quick results; (2) allowing technology to substitute for human quality; (3) restricting options; and (4) misusing qualitative methods. (PN)

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QUESTIONNAIRE DESIGN AND USE REVISITED:
RECENT DEVELOPMENTS AND ISSUES
IN SURVEY RESEARCH

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INTRODUCTION

The purpose of this presentation is to summarize and highlight some of the critical developments, issues, and trends which are impacting the work of survey research professionals. Advances in technology, continually advancing methodological knowledge, and changes in the social environment in which survey researchers work have all contributed to the changes which have occurred.

The presentation will begin with a brief discussion of information collected for the second edition of "Questionnaires: Design and Use." Also included in the presentation will be a discussion of several new developments which are having a major impact on survey research, and discussion of issues of which survey research professionals must be aware as they conduct their work in an environment that is continuing to change at an increasingly rapid pace.

Response Rate Issues

The issue of preventing or minimizing nonresponse bias by successfully obtaining cooperation from people being surveyed continues to be of concern to survey research professionals (9, 28). Without going into a lengthy review of the background of the many strategies that have been recommended over the years as response rate stimulators, there are a few more recent developments which deserve attention. These include claims that the number of people who refuse to participate in surveys is increasing, issues related to the definition of response rate, the need for creativity and flexibility in designing strategies to motivate potential respondents, and research being done to quantify and predict patterns of responding to questionnaires.

There appears to be a growing tendency among many survey research professionals to endorse a belief that people are becoming increasingly resistant to surveys.

The argument is usually based on assumptions that surveys are becoming more common, people are being surveyed more frequently, and, therefore, the number of "hard-core" nonrespondents is rapidly increasing. Fortunately, this belief is being challenged (25).

In more than 15 years of conducting surveys by mail, telephone, and in person with all types of persons ranging from the least to the most educated, from unemployed to professionals, including persons of varied races, national origin, and geographic locations, the author has routinely achieved response rates between 90% and 100% of the originally selected sample without replacing anyone in the sample. This experience has revealed no evidence that respondent resistance is increasing. Perhaps people are choosing to live their lives in ways that cause them to be less available to survey researchers, and perhaps people are becoming intolerant of poor quality questionnaires administered by incompetent interviewers or, worse yet, by automated machines. However, if a well designed survey is properly presented to potential respondents, they will cooperate.

Survey researchers must commit themselves to the belief that people will respond and then direct their energies toward structuring a strategy to obtain cooperation. Effort will be far more productively spent this way than in adopting a defeatist attitude and then attempting to devise ways to compensate or adjust for low response rates.

Another issue related to response rate that needs attention is the way in which response rate is conceptualized by some survey researchers. One of the more disturbing practices is the difference between the way people frequently present response rates from mail and telephone surveys. When discussing mail surveys, response rate is usually defined as the percentage of mailed questionnaires that are completed and returned. However, in studies using telephone interviews, it is not uncommon for researchers to replace people who are not reachable with people who are reachable until the desired number of interviews are completed. This practice

ignores the problem of nonresponse bias as illustrated in the comparison below:

| <u>Situation 1</u> | | <u>Situation 2</u> | |
|-----------------------------------|-------|--|-----------|
| Original sample size | = 300 | Original sample size | = 300 |
| Responses received | = 200 | Responses received | = 200 |
| Response rate = $\frac{200}{300}$ | = 67% | Responses received after replacements | = 300 |
| | | Claimed response rate | = 100% |
| | | Actual response rate (without knowing how many replacements were made) | = unknown |

What is needed is a uniform manner for computing and reporting response rates for all surveys whether mail, telephone, or personal interviews. One reasonable approach is to define response rate as the percentage of completed surveys obtained from the original sample without replacement (3). The only replacements permitted would be those who do not fit the population definition. An example would be replacing people who have moved out of the United States if the population being studied is defined as people living in the United States. Of course, another perplexing issue is deciding what constitutes a "completed" survey -- must every item be answered? how about three-fourths of the items? or one-half? One solution to this dilemma is to calculate and report a response rate for each item contained on the survey questionnaire. This will minimize data lost due to exclusion of less than totally complete surveys and will allow the users of research results to decide how much credibility to assign to the data derived from each item. For example, in one survey, most questions may have response rates of 90% or more. However, one or two items may be poorly written and have low response rates; perhaps the results from these items should be ignored or at least given less credibility than the rest of the results.

Research is continuing to examine various ways to stimulate response rates (8, 11, 12, 14, 15) and researchers are continuing to study the effects of various types of mail, cover letters, postage, incentives, and many other variables which have been examined for some time. However, there are also new directions being investigated.

For example, a number of studies have examined the effect of obtaining some type of prior commitment from a potential respondent before the actual survey (14, 18, 19, 24). This initial commitment could take the form of a brief postcard to be answered and returned, a brief telephone solicitation, or other forms. This technique has come to be appropriately known as the "foot-in-the-door" technique.

A number of studies are working toward quantifying various aspects of the response rate issue. One 1980 study (20) attempts to quantify the amount of time required to obtain various levels of response rate in mail surveys by developing a mathematical function and using regression to predict response rates.

When examining the various studies designed to test the effect of various specific treatments on response rate, one cannot help notice that results are often conflicting, i.e., what works for one study does not work for another study. Actually, this should be neither surprising nor alarming. After all, survey research is totally dependent on people to provide results, and we all know people are not all the same and do not all react the same way to similar circumstances. We should be grateful for this -- if people were all exactly the same, survey research would be unnecessary and we would all be unemployed.

As researchers work to define variables that affect response rates more precisely and attempt to quantify these effects, there may be a tendency to accept the findings of a study as "fact" and assume the results will be the same for all survey research studies. A better and more productive approach is to use the various techniques to build a repertoire of techniques and be prepared to use them when appropriate. This will allow tailoring the approach to be most effective with the population being studied. The most effective response rate stimulating strategies are those that are creatively designed to fit the people being surveyed and flexible to meet the changing characteristics of different populations (1).

Effect of People Who Are Unreachable by Telephone

One issue that continues to be of concern to survey researchers who use telephone interviewing as a data collection technique, is the question of the extent of the bias caused by people who are unreachable by telephone. In thinking about this issue, it is important to remember that there are three major reasons why people are not reachable by telephone: (1) they do not have telephone service in their home or accessible to them, (2) they have telephone service, but have an unpublished number, or (3) they have phone service and a published number, but are difficult to contact.

The third group, i.e., those with phone service who are difficult to contact present a problem that is different from the other two groups. This group really presents a challenge of nonresponse and the threat they present to quality data is nonresponse bias. Therefore, the solution for handling this group is no different from any other group that is difficult to get to respond whether in a mail survey, a telephone interview, or a personal interview. The key is to make contact by persistent and carefully scheduled attempts, and by trying different contact methods, e.g. mail, personal visits, and telephone. For example, telephone calls can be scheduled on different days of the week and at different times of the day, a postcard or letter indicating your need to contact them could be sent including a name and phone number they can call to schedule a convenient interview time, or a visit could be made to talk with neighbors to determine when the potential respondent is reachable.

The other two groups present a different problem. In discussing the possible bias introduced by these two groups, people often cite research which shows that households without phone service differ in certain ways from households with phone service and that households with unpublished phone numbers differ from those with published phone numbers (5, 16, 17). Such studies frequently rely on comparisons of demographic characteristics.

It has become trendy to argue that all telephone surveys should use a random

digit dialing procedure to prevent the bias that can result from missing unpublished telephone numbers (4). Before deciding such a procedure is necessary and incurring additional expense implementing it (22), consider the effect these problem groups will have on the outcome of the survey.

The important concern for the survey researcher is how much do these differences affect the results of the survey being conducted? Surveys are usually conducted by selecting a sample and then projecting the results obtained from that sample to the population from which the sample was selected. The important issue is making certain the sample is not different from the population in some way that will affect the results.

Therefore, the focus of concern for survey researchers should be not whether households with telephones differ from those without telephones or whether those with or without published listings differ, but, rather, whether the total sample results differ when such groups are included or not included in the sample. In most studies, the percentage of sample that are in these two groups will be small and have little effect on the survey results. Studies designed to examine the size of such effects have found that, while differences between these groups and other respondents may be statistically significant the effect they have on changing the overall survey results is small -- often 2% or less (21, 23, 26, 29).

Obviously, these results should not be interpreted to mean that one need never worry about bias caused by households without telephones or with unpublished telephone numbers. In some studies an error of 1% or 2% or less may not be tolerable, or in studies of certain segments of a population such as very low income groups many people may not have telephones and the effect may be large. Decisions as to the necessity of using random digit dialing procedures must be made for each study. However, it does appear that survey researchers need not uniformly adopt random digit dialing procedures for all telephone studies.

Randomized Response Technique

Obtaining truthful answers to questions of a sensitive nature is a problem which faces nearly every survey research professional at some time. One approach to this problem that is receiving positive results is the randomized response technique. Basically, this technique involves presenting the respondent with more questions than just the sensitive question. The respondent answers only one question and is given some random means such as a coin to flip or die to toss to select which question will be answered. Only the respondent will know which question was answered making it impossible to determine if the sensitive question was answered. The respondent's answer is then combined with answers from other respondents and, knowing the probability of answering the sensitive question, summarized responses to the sensitive question can be computed.

Most researchers studying this technique have found it to be successful in obtaining answers to sensitive questions (6, 13, 30).

Technological Developments

New developments in technology are definitely having an impact on survey research. The two activities in survey research that have been most directly affected so far are data collection and data analysis.

The most obvious change in data collection technology is the exploding increase in the use of Computer Assisted Telephone Interviewing (CATI). CATI systems first emerged in the mid-1970's and have continued to increase in popularity and sophistication. These systems utilize a computer to store and display an interview questionnaire so the interviewer reads the questions displayed on the monitor screen. In the early versions, the interviewer used a keyboard to enter responses; however, systems now have been developed to eliminate the keyboard by using light pens touched to the screen.

CATI systems have many advantages including the convenience of having the computer pre-programmed to control the flow of questions to prevent missing of skip patterns. They can also "edit" the interviewer's work to prevent mistakes such as entering an inappropriate response. These features make it possible to administer very complex questionnaires with skip patterns that would be cumbersome and prone to more error using paper and pencil forms. Also, CATI systems make it easier for interviewers to incorporate responses from questions into later questions, such as inserting names of people, dates, brand names, etc. CATI systems also permit visual monitoring of interviewers' work in addition to the usual auditory monitoring. Responses are instantaneously entered into the computer memory greatly speeding up the research process by eliminating later data entry and much of the usual editing process. CATI systems are now available for use with multi-user computers utilizing a host computer and remote terminals or for stand-alone personal computers.

In addition to controlling display of questionnaire items and entry of responses, software for CATI systems can now also assist with survey management by keeping track of interview attempts and controlling the scheduling of callback attempts at pre-specified times. Careful scheduling of callbacks can help reduce nonresponse. Recording of response rates, refusals, and other information can also be easily accomplished.

Of course, there are limitations. At present, most CATI systems are quite expensive to install unless the hardware is already available. Also, many systems are not as flexible as one might wish them to be. For example, the recording of open-ended responses cannot always be accommodated. Some CATI systems cannot display questions as quickly as desirable and such delays can be bothersome to the smooth flow of an interview administration. In addition, some interviewers may have trouble adjusting to CATI because they can write faster than they can type or they make more errors in recording responses because of limited keyboard skills.

Although CATI systems are becoming quite common and their use is expanding,

there has not been sufficient research conducted to measure the positive and negative effects of CATI on interview results. More carefully designed studies are needed to compare the results obtained with a CATI system to results obtained with paper and pencil interviewing. One such study (28) found that CATI resulted in a large reduction in the number of interviewing errors which necessitate recontacting respondents.

The other significant technological catalyst in survey research is the personal computer. It has affected many phases of the research process, but its largest impact has been in the analysis of data. Personal computers have also assisted with other aspects of the study. They have become a marvelous tool for managing a study. Inexpensive data base management software is being used to assist with sample selection, to structure sampling frames, and to systematically keep track of responses to mail surveys. Elaborate tracking systems can be developed quite inexpensively to record returned questionnaires and to indicate daily which people haven't responded and who should receive follow-up contact.

The availability of easy-to-use, inexpensive software for statistical analysis is mushrooming. Perhaps the most significant developments for survey researchers is the availability of familiar software packages such as SPSS and SAS for the personal computer. SPSS can be purchased for approximately \$800 and additional multivariate procedures and graphics packages can be added at little additional cost. This means that a complete system of hardware, such as an IBM PC XT, and SPSS software can be purchased for as little as several thousand dollars. The speed and capacity of these programs is very satisfactory for almost any survey research project.

Trends

The changing environment in which survey research is developing is presenting researchers with great opportunity. However, along with the opportunities tempting dangers are also present. Researchers and managers of research must avoid being

easily seduced into embracing certain emerging trends which will endanger the quality of research efforts. These twentieth century sirens of the research world include over-emphasis on quick results, allowing technology to substitute for human quality, tendencies to permit expensive investments in technology and veneration of experts to restrict our choice of options, and the misuse of qualitative research methods often in the interest of reducing expense.

A. Over-Emphasis on Quick Results

In an age in which computers can create art and produce music, in which we see major news events unfold live as they happen on the evening news, and in which the results of presidential elections are known before the last voters have cast their vote, it should not be too surprising that users of research results are seeking results faster and faster.

Some reduction in the time required to conduct a survey research project is not an unrealistic expectation. Perhaps the biggest time saver is technology. Faster and more accessible computers and statistical analysis software, word processors to reduce the time required to prepare questionnaires and written reports, and CATI have all helped speed up the research process. Also, non-technological improvements in survey research such as improved knowledge concerning how to motivate people to respond to surveys, and judicious use of correct sampling strategies which can reduce the number of people that must be surveyed can result in time savings.

However, we must recognize that the purpose of conducting survey research is to obtain accurate and dependable results. To accomplish this goal and not compromise results requires recognition of the fact that the time required to conduct good survey research can only be compressed to certain limits given our current knowledge and technology.

For example, to the uninitiated, a plausible solution to the "time crunch" might be to expand the size of the interviewing staff so more interviews can be conducted

in less time. This logic, carried to extreme, could be interpreted to suggest that, given enough interviewers, even a large sample of many thousands could be surveyed in less than one day. However, to have accurate results, sufficient time must be taken to permit call backs of people not initially available. This usually requires scheduling attempts at different times of the day and on different days of the week, thereby necessitating at least several days or even weeks to contact the original sample and avoid massive replacements in the sample which can seriously bias the results.

Similarly, people conducting mail surveys may suggest mailing of massive numbers of questionnaires to obtain the required number of responses in a shorter time. This argument overlooks the need for a high response rate and can, again, sacrifice quality unnecessarily.

While time can be condensed, survey researchers must not allow themselves to be fooled or required to conduct research in time constraints that are not realistic at present and that will impede the quality of the research. As professionals, we must educate the consumers of our product, i.e., research results, about the time required to conduct good research and about the price that must be paid for excessive time compression.

B. A Caution About Technology

The technological revolution has certainly had a major impact on the field of survey research. These impacts are occurring in all phases of survey work. The most obvious example is in analysis of responses -- personal computers are now within nearly everyone's reach together with inexpensive and comprehensive software. Computer technology in the form of word processors has impacted questionnaire design and report preparation. Sampling is frequently done by using computer generated random digits and using data base management software. Data is often collected using computer assisted interviewers. Other technological changes which will impact survey research include electronic mail, telephone answering machines,

home computers integrated with communications systems, etc., etc.

There is a danger that fascination with these changes may cause researchers to forget that these marvels are merely tools to help them do their work. At this point in time, the human element is critically important and essential to the survey research process. For example, computer assisted interviewing can greatly reduce interviewer errors in recording responses; however, some people seem to think they can utilize lesser quality interviewers and that the computer will compensate. Nothing can replace the skill and resourcefulness of a good, experienced, trained, professional interviewer. Similarly, nothing can replace the analytical mind of a skilled data analyst. Mountains of useless computer print-outs are being generated by people using personal computers to compute statistical procedures that are unnecessary because the user doesn't know what procedures to do.

The advances in technology must be used to enhance and expand the capabilities and capacity of skilled research personnel, not substitute for them.

C. Restricting Options

Another disturbing trend in survey research is what appears to be a diminishing creativity and flexibility among some researchers. This is caused by at least two factors. First, researchers have often invested heavily in expensive new machinery and software. Once such an investment is made, it must be used. Therefore, some researchers with expensive CATI systems feel obligated to use telephone interviewing to conduct every survey research project they do. People may also invest heavily in the design of a questionnaire and then try to recover that investment by repeated use of the same questionnaire. Unfortunately, many people use these "generic" questionnaires in situations for which they were not designed with the result that data is often overly general and sometimes not the data needed to accomplish the intended research purpose.

Second, researchers must be careful not to let their creativity be stifled by

"veneration of experts." It is tempting to look for the method to use in all situations and then mass produce it. Indeed attempts have been made to develop such a method or to create one out of the recommendations of researchers (10).

Collections of questionnaire items have been developed and, while this practice can be an assistance to questionnaire construction, survey research professionals must be cautious in their use. Overreliance on such resources can lead to acceptance of items as "high quality" items because they were developed by "experts." Only careful examination of the methods used to develop these items such as pretest procedures, information about the populations with which they have been used, etc. will provide needed information about their quality. If such items are used in questionnaire development, it is essential to pretest them with the population who will respond to the questionnaire to be certain they will be successful with that specific population.

Also, "borrowed" items can be dangerous if they are used as a "short cut" to questionnaire construction resulting in insufficient time and energy being devoted to clarifying the specific goals for the survey. This can result in data that is less useful than desired because the items may not address the exact purposes of the survey research.

However, the essence of survey research is collecting information from people. People are not all the same; they are diverse in background, interests, and motivations. Research methods must recognize this and researchers would be well advised to amass an arsenal of techniques at their disposal and broaden their options through creative thinking and methodological research, rather than narrowing their options by seeking one easy solution that can be applied to all situations.

D. Misuse of Qualitative Methods

The use of qualitative research methods, especially focus groups, is expanding. Many people see these as an inexpensive alternative to quantitative studies. People sometimes fail to recognize that qualitative and quantitative methods are not the

same and are not intended to achieve the same results. Qualitative methods are not cheap substitutes for quantitative studies, but, rather, are useful techniques when used correctly.

One author (7) has summarized the appropriate uses of focus groups into three categories: (1) exploratory approach, (2) clinical approach, and (3) phenomenological approach. The exploratory approach uses focus groups to generate ideas to help develop further research or to test ideas and procedures. The clinical approach uses focus groups as a means for an "expert" to observe people's behavior and then form clinical judgements which form the results. The phenomenological approach emphasizes the value to be gained from observing the interaction of focus group participants and bases results on information obtained from studying those interactions.

Survey researchers must be aware when each of these methods is appropriate and assist the research consumer in learning the distinction also. Generally, focus groups do not provide data that are generalizable to populations with any measurable degree of accuracy. If such generalization is desired, a quantitative study is necessary.

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